

**REMARKS**

By this reply, claim 1 has been cancelled without prejudice to or disclaimer of the subject matter contained therein; claims 3-5, 8, 11 and 14 have been amended; and new claims 16-21 have been added, leaving claims 3-5 and 8-21 pending in the application. The specification has been amended. No new matter has been added by the amendments. Reconsideration and allowance are respectfully requested in view of the following remarks.

**Personal Interview**

Applicants thank Examiner Verdier for the courtesies extended to their undersigned representative during the personal interview conducted on February 23, 2006. Applicants' separate record of the substance of the interview is incorporated in the following remarks.

**Objections to the Specification**

The Office Action objects to the specification under 37 C.F.R. § 1.75(d)(1) for allegedly not providing antecedent basis for claimed subject matter.

As suggested in the Office Action, the specification has been amended to provide additional literal support for the claimed subject matter. Accordingly, withdrawal of the objection is respectfully requested.

**Rejection Under 35 U.S.C. § 112, First Paragraph**

Claim 5 stands rejected under 35 U.S.C. § 112, first paragraph, for the reasons stated at pages 6-7 of the Office Action. The rejection is respectfully traversed.

Claim 5 depends from new claim 16. The specification provides a written description of the subject matter recited in claim 5. Therefore, withdrawal of the rejection is respectfully requested.

**Rejection Under 35 U.S.C. § 112, Second Paragraph**

Claim 5 stands rejected under 35 U.S.C. § 112, second paragraph, for the reasons stated at pages 7-8 of the Office Action. The rejection is respectfully traversed.

Applicants submit that claim 5 is in compliance with the requirements of 35 U.S.C. § 112, second paragraph. Therefore, withdrawal of the rejection is respectfully requested.

**Rejection Under 35 U.S.C. § 102**

Claims 1, 3, 4, 8, 10-12, 14 and 15 stand rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 5,931,638 to Krause et al. ("Krause") for the reasons stated at pages 8-9 of the Office Action. Claim 1 has been cancelled. The rejection is respectfully traversed.

Claims 3 and 4 depend from new claim 16. Claim 16 recites a component of a fluid flow machine, which component comprises "a coolant passage comprising at least one curved flow section configured to curve in a first flow direction to establish

coolant medium flow in the first flow direction; and a second passage comprising an inspection aperture arranged and dimensioned to enable the introduction of a borescope through the inspection aperture and the second passage, and the second passage (i) branching off the coolant passage at the curved flow section and (ii) being arranged to extend in the first flow direction along a flow path which is tangential to the curved flow section" (emphasis added).

In the exemplary embodiment of the claimed component shown in Fig. 1, the second passage comprising dust discharge aperture 5 "branches off" the cooling channel 4 at the curved flow section. In the exemplary embodiment of the component shown in Fig. 2, channel 7 "branches off" the cooling channel 4 at the curved flow section. In other words, in each of these exemplary embodiments of the claimed component, the second passage separates from the cooling channel 4 at the curved flow section. The claimed "at least one curved flow section" is configured to curve in a first flow direction to establish coolant medium flow in the first flow direction." The claimed second passage is "arranged to extend in the first flow direction along a flow path which is tangential to the curved flow section." Accordingly, the second passage also extends in the first flow direction, which is established by the configuration of the curved flow section, along a flow path tangential to the curved flow section.

The Office Action asserts that Krause discloses a component 10 of a fluid flow machine comprising a "curved flow section A", a "first section B" through which coolant flows toward the curved flow section, a "second section C" adjacent the first section through which the coolant flows away from the curved section, and a "second

passage 74.” See the annotated version of FIG. 2 of Krause shown at page 11 of the Office Action.

Krause does not disclose the subject matter of claim 16. As was discussed in the Amendment filed on September 6, 2005, one having ordinary skill in the art would understand that the features of claim 1 regarding the size of the inspection aperture clearly define a minimum diameter of the inspection aperture for it to be usable for this purpose. As was also discussed in the Amendment, Krause discloses no inspection means in the turbine blade 10, much less that the tip passage 74 is necessarily arranged and dimensioned to enable the introduction of a borescope through the tip passage 74. As such, Krause does not support the alleged inherency. Thus, claim 16 is not anticipated by Krause for at least this reason.

Furthermore, in Krause's turbine blade 10, coolant  $C_{MC}$  flows upwardly along the “first section A,” then turns counter-clockwise at the “curved section A,” and then continues downwardly along “second section C.” Accordingly, the coolant flow direction established by the “curved section A” is counter-clockwise. Fluid that flows through Krause's tip passage 74 does not flow in the same counter-clockwise coolant flow direction along which the coolant that flows through the “curved section A” and then along the “second section C.” Accordingly, Krause does not disclose a “second passage (i) branching off the coolant passage at the curved flow section and (ii) being arranged to extend in the first flow direction along a flow path which is tangential to the curved flow section” (emphasis added), as claimed. Thus, the component recited in claim 16 is patentable over Krause for this additional reason.

Claims 3 and 4 are also patentable over Krause for at least the same reasons as those for which claim 16 is patentable.

Independent claim 8, as amended, recites a component of a fluid flow machine, which comprises “a coolant passage comprising a curved flow section, a first section through which a cooling medium flows toward the curved flow section, and a second section adjacent the first section through which the cooling medium flows away from the curved flow section; and a second passage comprising an inspection aperture, the inspection aperture including a wall flush with a wall of the coolant passage, and the second passage (i) branching off the coolant passage at the curved flow section and (ii) being arranged as a tangent to the curved flow section; wherein both of the first section of the coolant passage and the second passage are partially defined by a common surface of a wall” (emphasis added).

FIG. 2, for example, shows channel 4 having adjacent sections, where the left-most section is a “first section” and the adjacent section is the “second section.” The channel 4 and the channel 7 are both partially defined by a common surface of a wall.

The Office Action contends that Krause's airfoil has a “common surface F.” However, as shown in FIG. 2 of Krause, the rib “F” has one surface facing and partially defining the “second section C,” and an opposite surface facing and partially defining the “first section B.” To the extent that the rib has been considered to be a “wall,” the rib does not include a common surface that partially defines both the “first section B” and the “second passage” 74. Accordingly, claim 8 is also patentable over Krause.

Claim 10 depends from claim 8 and thus is also patentable over Krause.

Independent claim 11, as amended, recites a component of a fluid flow machine, which comprises “a coolant passage comprising at least one curved

section, a first section, and a second section, the coolant passage being configured to establish flow of the cooling medium in series from the first section to the curved section and from the curved section to the second section; the second passage comprising an inspection aperture, and the second passage (i) branching off the coolant passage at the curved flow section and (ii) being arranged as a tangent to the curved flow section; wherein the coolant passage and the second passage are configured to establish a common direction of flow of the cooling medium at the curved section and into the second passage" (emphasis added). Krause also does not disclose the component recited in claim 11. Accordingly, claim 11 is also patentable over Krause.

Claims 12-15, which depend from claim 11, are also patentable over Krause for at least the same reasons as those for which claim 11 is patentable.

Therefore, withdrawal of the rejection is respectfully requested.

#### **First Rejection Under 35 U.S.C. § 103**

Claims 9 and 13 stand rejected under 35 U.S.C. § 103(a) over Krause in view of U.S. Patent No. 3,628,885 to Sidenstick ("Sidenstick") for the reasons stated at pages 12-13 of the Office Action. The rejection is respectfully traversed.

Claims 9 and 13 depend from claims 8 and 11, respectively. Sidenstick has been cited for allegedly suggesting features recited in claims 9 and 13. Applicants submit that Sidenstick does not provide the required suggestion or motivation to modify Krause's turbine blade to overcome the above-described deficiencies of Krause and result in the combinations of features recited in claims 8 and 11. Thus, claims 9 and 13 are also patentable over the applied combination of references.

Therefore, withdrawal of the rejection is respectfully requested.

**Second Rejection Under 35 U.S.C. § 103**

Claims 11, 12, 14 and 15 stand rejected under 35 U.S.C. § 103(a) over Krause in view of U.S. Patent No. 5,975,851 to Liang ("Liang") for the reasons stated at pages 13-14 of the Office Action. The rejection is respectfully traversed.

Liang has been cited for allegedly suggesting features of claims 11, 12, 14 and 15. Applicants submit that Liang fails to provide the required suggestion or motivation to modify Krause's turbine blade to overcome the above-described deficiencies of Krause and result in the combination of features recited in claim 11, including, *inter alia*, "a coolant passage comprising at least one curved section, a first section and a second section, the coolant passage being configured to establish flow of the cooling medium in series from the first section to the curved section and from the curved section to the second section"; and where "the coolant passage and the second passage are configured to establish a common direction of flow of the cooling medium at the curved section and into the second passage." Thus, claim 11 is also patentable over the applied references.

Dependent claims 12, 14 and 15 are also patentable over the applied references for at least the same reasons as those for which claim 11 is patentable. For example, claim 14 recites that "the coolant passage and the second passage are arranged such that particles entrained in the cooling medium pass through the first section, through the second passage and are discharged through the inspection aperture, while the cooling medium which is relatively free of particles flows through the second section" (emphasis added). In contrast, in Krause's turbine blade, the

fluid flow in the counter-clockwise direction will carry particles entrained in the coolant. Applicants submit that the Office Action has established no basis for the assertion that the coolant that flows through the "second section C" would be relatively free of particles.

Therefore, withdrawal of the rejection is respectfully requested.

**Third Rejection Under 35 U.S.C. § 103**

Claim 13 stands rejected under 35 U.S.C. § 103(a) over Krause in view of Liang and further in view of Sidenstick for the reasons stated at pages 14-15 of the Office Action. The rejection is respectfully traversed.

Claim 13 depends from claim 11. Applicants submit that Liang and Sidenstick do not provide the required suggestion or motivation to modify Krause's turbine blade to overcome the above-described deficiencies of Krause and result in the combinations of features recited in claim 11. Thus, claim 13 is also patentable over the applied references.

Therefore, withdrawal of the rejection is respectfully requested.

**New Claims**

New claims 17 and 18 depend from claims 8 and 11, respectively, and recite that "the coolant passage is configured to further establish flow of the cooling medium in series from the second section to cooling apertures at an edge of the component at which the cooling medium leaves the component." Support for these claims is found, for example, at paragraphs [0013] and [0015] of the specification.



fluid flow in the counter-clockwise direction will carry particles entrained in the coolant. Applicants submit that the Office Action has established no basis for the assertion that the coolant that flows through the "second section C" would be relatively free of particles.

Therefore, withdrawal of the rejection is respectfully requested.

### **Third Rejection Under 35 U.S.C. § 103**

Claim 13 stands rejected under 35 U.S.C. § 103(a) over Krause in view of Liang and further in view of Sidenstick for the reasons stated at pages 14-15 of the Office Action. The rejection is respectfully traversed.

Claim 13 depends from claim 11. Applicants submit that Liang and Sidenstick do not provide the required suggestion or motivation to modify Krause's turbine blade to overcome the above-described deficiencies of Krause and result in the combinations of features recited in claim 11. Thus, claim 13 is also patentable over the applied references.

Therefore, withdrawal of the rejection is respectfully requested.

### **New Claims**

New claims 17 and 18 depend from patentable claims 8 and 11, respectively, and recite that "the coolant passage is configured to further establish flow of the cooling medium in series from the second section to cooling apertures at an edge of the component at which the cooling medium leaves the component." Support for these claims is found, for example, at paragraphs [0013] and [0015] of the

specification. New claim 19 depends from patentable claim 8, and new claims 20 and 21 depend from patentable claim 11. Claims 17-21 are also patentable.

**Conclusion**

For the foregoing reasons, allowance of the application is respectfully requested. If there are any questions concerning this response, to expedite prosecution, the Examiner is respectfully requested to contact the undersigned at the number given below.

Respectfully submitted,

BUCHANAN INGERSOLL PC

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